

Date: July 12, 2018

To: Mike Cirian, USEPA

From: Laura Jensen, Roux
 CC: John Stroiazzo, Glencore
 Steve Wright, CFAC
 Dick Sloan, MDEQ
 Andrew Baris, Roux

Re: **Meeting Minutes for July 10, 2018**
Call to Discuss Responses to EPA Comments on Soil Scope of Background Investigation SAP
CFAC Remedial Investigation / Feasibility

A conference call was held on Tuesday, July 10, 2018 at 1:00 PM EST/ 11:00 AM MST to discuss CFAC/Roux's responses to USEPA comments on the soil scope of work of the draft Background Investigation Sampling and Analysis Plan (Background SAP). The draft Background SAP was submitted to USEPA and MDEQ on May 25, 2018. CFAC/Roux received comments provided by USEPA and their consultant CDM Smith on May 31, 2018, regarding the high-water scope of work. CFAC/Roux provided responses to the high-water scope of work comments on June 5, 2018 and the high-water scope of work was conditionally approved by USEPA on June 6, 2018. Following the conditional approval of the high-water scope of work, CFAC/Roux received comments provided by USEPA and CDM Smith on June 15, 2018, regarding the entire Background SAP (including the high-water and soil scope of work comments). CFAC/Roux provided responses to the USEPA comments on July 9, 2018, and a call was held on July 10, 2018 to discuss the responses. The following individuals attended the conference call:

- Mike Cirian – USEPA
- John Stroiazzo – Glencore
- David Berry – USEPA
- Steve Wright – CFAC
- Gunnar Emilsson – CDM Smith
- Andrew Baris – Roux
- Sean Coan – CDM Smith
- Laura Jensen – Roux
- Lynn Woodbury – CDM Smith
- Crystal Stowell – Roux

The CFAC/Roux responses submitted on July 9th highlighted ten key comments and responses for discussion on the call. The key comments to be discussed included comments that could potentially affect the scope of work, most notably, comments related to the statistical analysis methods, the sampling to support the statistical analysis, and the selection of background reference areas. The USEPA comments discussed on the call are shown below (*in italicized text*), followed by a summary of the discussion and specific agreed upon follow-up action items (*in red font*).

DISCUSSION OF COMMENT RESPONSES

Page 3, Section 2.2 – This section does not discuss the statistic of interest for performing comparisons to background – i.e., a mean or a high-end value within the distribution. Although the text mentions the use of 95% upper confidence limits on the mean (95UCLs) and use of hypothesis testing (which is typically comparing means/medians), there is also mention of the use of background threshold values (BTVs)

(which are often based on the high end of the background distribution). Thus, the basis for decision-making is unclear. Please revise the section for clarity; see also the proposed evaluation approach presented in Exhibit A.

CFAC/Roux clarified the statistics of interest (i.e. UCL and BTV) and the general approach for the statistical analysis, as outlined in the modified Exhibit A. USEPA generally agreed with the approach and the response provided. CDM Smith wanted to confirm that the comparisons will be performed on an exposure area basis rather than a Site-wide basis. CFAC/Roux confirmed that the comparisons will be performed on an exposure area basis. The group discussed Roux's proposed use of the UCL_{Background} for the statistical comparison rather than the Mean_{Background}, and CDM Smith elaborated on their rationale for utilizing the Mean_{Background}. It was agreed that CFAC/Roux will consider both statistical options and will provide a proposed path forward for USEPA approval prior to revising the Background SAP.

Page 3, Section 2.2 – The text does not discuss the basis of the BTV. Although this value typically represents a high-end concentration, the statistical basis is not stated. For example, ProUCL provides a range of statistics that could be selected (e.g., the UTL95-95, USL, 95UPL). Please clarify the basis of the BTV statistic.

CFAC/Roux clarified that the Upper Tolerance Limit (UTL) 95-95 will be utilized for the BTV.

Page 4, Section 2.3 – Provide justification provided for the sample size of 10. This discussion should be included in Step 7 of the DQO process. In particular, this discussion should demonstrate that 10 samples will be adequate to meet the stated tolerable decision error limits specified in Step 6 of the DQO process.

CFAC/Roux described the statistical analysis performed as part of the preparation of the responses to justify the sample size of ten (10). An analysis was performed with the Phase I Site Characterization data set from the Western Undeveloped Area utilizing the ProUCL DQOs Based Sample Size tool. The analysis yielded an approximate minimum sample size of seven (7) samples, which was rounded up to ten (10) samples to be conservative and to ensure sufficient data are available to calculate reliable statistics. CDM Smith generally agreed with the approach of the analysis, but inquired if the analysis was performed utilizing Form 1 or Form 2. It was agreed that CFAC/Roux will confirm if the analysis was performed utilizing Form 1 or Form 2 and will inform USEPA. At that time, it will be evaluated if any additional analysis is necessary to justify the sample size.

Page 4, Section 2.4 – Please review the EPA DQO Guidance for the requisite outputs for DQO Step 4. In particular, this section should discuss the smallest units upon which decisions will be made (i.e., discuss how the site datasets and background datasets will be grouped for the purposes of making site vs. background comparisons). Please ensure this section includes a discussion of the different exposure area sizes relative to the receptor types of interest (e.g., the exposure area for human receptor populations will be different for wildlife with small home ranges).

CFAC/Roux described the proposed approach for comparing soil datasets from onsite human health and ecological exposure areas with corresponding background soil type datasets. Additionally, CFAC/Roux described the rationale for the proposed grouping of background datasets from the three primary soil types, if it is determined that the datasets are not statistically different. The approach for comparisons of different receptor types of interest (i.e., human health receptor populations, large home range ecological receptors, and small home range ecological receptors) were also discussed. USEPA generally agreed with the approaches described, and inquired regarding the size of the small home range (i.e., ¼-acre). CFAC/Roux will review the draft Baseline Ecological Risk Assessment Work Plan (BERA WP) and inform USEPA of the small home range size. The group also discussed potentially modifying the Exhibit A flow chart to address the evaluation of small home range receptors. It was agreed that CFAC/Roux will respond to USEPA with the small home range size and will also propose modifications to the Exhibit A flow chart to address the small home range receptors. USEPA also requested that CDM Smith review the proposed approach with Brian Sanchez, USEPA's ecological risk assessor, who was not available to be on the call.

Page 4-5, Section 2.4 – Include a discussion of any expected patterns in concentration as a function of depth in the background areas. It is possible that background areas, even in upwind locations, have the potential to have Site-related and/or non-Site-related anthropogenic impacts due to aerial deposition. Additional discussion is needed to determine what, if any, sampling methodology adjustments may be needed to address this issue. Recommend this as a topic for discussion on a future project call.

CFAC/Roux discussed that the highest concentrations in background areas would be expected in the surface soils due to aerial deposition as the most likely mechanism for contamination of soil. Therefore, the Background Investigation focuses on sampling soils at the surface. CDM Smith suggested that there may be a potential concern for Site-related impacts to have affected the proposed soil background areas due to non-dominant winds from the north/northeast. CFAC/Roux described the low potential for the background areas to be impacted from Site emissions based upon: 1) the Phase I findings of non-detect or low-concentrations (i.e., less than screening levels) of COPCs near the southwest Site boundary, 2) the proposed locations are upwind of the Site based on the prevailing wind direction shown on the wind-rose diagram, and 3) the locations are at least approximately one mile from the former plant.

USEPA expressed concern for Background Soil Reference Area #1 having potential to receive contaminants from vehicular operations along the highway (Highway 2 East) located adjacent to this reference area. CFAC/Roux agreed to move the reference area a few hundred feet back (northwest) from the highway. CFAC/Roux will provide updated figures presenting the relocated reference area away from the highway as part of the response to comments.

Page 5, Section 2.4 – Based on a review of the surface soil types presented in Figure 4, there are more than three soil types within the Site boundary. Please clarify how and why soil types were combined into three general soil types. See also the comments on Figure 4 below.

CFAC/Roux described that the three major soil types are derived from a combination of both Figures 3 and 4, and are grouped as Glacial Till and Alluvium (soils deposited by glacial activity), Fluvial Deposits and Riverwash (soils deposited by river activity), and Mountainous Land with Glacial Deposits (soil interaction between the glacial outwash and bedrock). The differences in Figure 4 are more apparent because the United States Department of Agriculture Natural Resources Conservation Service (NRCS) differentiates surface soil types based on slight changes in soil type or grain size. CDM Smith suggested utilizing only Figure 3 in the SAP to streamline the rationale for reference area selection, since Figure 3 more clearly depicts the three general soil types. CFAC/Roux agreed to that proposed approach, but USEPA and CDM Smith indicated they would further discuss this internally and let CFAC/Roux know their preference.

Pages 5 and 6, Section 2.5 – Use of statistical hypothesis testing requires the two datasets are collected using similar methodology (i.e., cannot compare discrete grabs to ISMs) and has limited utility for samples collected via judgmental sampling. There is also no discussion of the use of the BTV in decision-making. This section should be revised to clarify the proposed methodology for making site vs. background comparisons for each sample type. Refer to the flow diagram in Exhibit A to illustrate EPA's proposed methodology.

It should be noted that this comment was not highlighted in the response document sent to USEPA. CDM Smith requested clarification that results of the ISM sampling will not be compared to the background dataset. CFAC/Roux confirmed that ISM samples would not be compared to background data, and agreed to clarify this in the revised Background SAP.

Page 6, Section 2.5, 2nd and 3rd paragraphs – Two-sample hypothesis testing should be performed using Background Test Form 2 (EPA 2002) – i.e., the null hypothesis should assume site is higher than background.

CFAC/Roux agreed to conduct Background Test Form 2 for hypothesis testing. As stated in the July 9, 2018 response to comments document, CFAC/Roux was still evaluating options for the substantial difference at the time the responses were submitted to USEPA. During the call, CFAC/Roux proposed that the substantial difference be based upon a proportion of the background sample variability (i.e., standard deviation), as outlined in the USEPA guidance referenced in the comment. The proposed proportion for these analyses is 1.3, which corresponds to the 90th percentile for a normal distribution. Analyses performed using the Phase I data from the Western Undeveloped Area indicated that the substantial difference will be less than the Residential RSLs for most analytes, and that the desired power and confidence for the test will be met. USEPA generally agreed with this approach, and requested that CFAC/Roux propose the approach in writing prior to revising the Background SAP. CFAC/Roux will provide the approach in writing for approval prior to the SAP revisions, likely as a supplemental response to USEPA comments.

Page 9, Section 3.2, Soil Background Area #1 – The majority of the soil at the site has been designated as glacial till and alluvium (soil type 27-7). Background Area #1 is not in an area identified as soil type 27-7, but rather as outwash as gravelly loam (Mh). Additional discussion is needed to identify a more appropriate 27-7 background area. Recommend this as a topic for discussion on a future project call. The proposed Background Area #1 can be retained, however, as a suitable location for soil type Mh (i.e., this can be retained as Background Area #4). See also the comments on Figure 4.

As it pertains to proposed Soil Background Reference Area #1, CFAC/Roux described that the majority of Site soils were designated as glacial till and alluvium (both 27-7 and Mh on Figure 4). Both soil types are very similar, as defined in the response, and are both categorized as glacial and glaciofluvial deposits. It was discussed that the 27-7 soil type does not occur upwind of the Site with the exception of soils to the east of the Site, where soils are no longer in the Flathead Valley. CDM Smith generally agreed with this approach and noted that the Tables 2 and 3 provide clarification between the soil descriptions, but wanted to convene internally and with the USEPA risk assessors to provide additional comments/a proposed path forward following further evaluation.

Page 10, Section 3.2, Soil Background Area #2 – Inspection of Figure 4 and Figure 6 show Background Area #2, which is to be representative of fluvial deposits and riverwash (Rc), is located within a region comprised of sandy alluvium (soil type 'Ca' in Figure 4). This soil type is prevalent on the islands to the south of the Site. Also, the designated sampling area is downstream on the Flathead River from the Site and has the potential to be Site-impacted. Additional discussion is needed to identify a more appropriate background area located upstream of the Site. Recommend this as a topic for discussion on a future project call. See also the comments on Figure 4.

As it pertains to proposed Soil Background Reference Area #2 (similar to the discussion for Area #1), both soil types Rc and Ca are very similar and are categorized as alluvial deposits generated from flood plains. CDM Smith noted that Tables 2 and 3 provide clarification for this point. CDM Smith expressed concern that the proposed reference area is located downgradient/downstream of the Site. CFAC/Roux understood the concern, and further described that the historic data and Phase I data indicated that downgradient samples in the Flathead River were generally non-detect or detected at low concentrations, indicating that the flood plain soils in the reference area have little potential to be affected by contaminants from the Site. Further, it was discussed that this reference area is located approximately 1-mile south of the Site boundary and over 1.5-miles from the Main Plant. CDM Smith suggested that CFAC/Roux evaluates soil locations upgradient of the Site, and CFAC/Roux expressed that locations upgradient of the Site were evaluated during background reconnaissance and the preparation of the draft SAP but are generally inaccessible due to the cliff alongside the River and third-party access. Additionally, soil locations north of the River have the potential to be affected by the railroad. It was noted that locations east of the Site were evaluated, but were not originally considered as potential background locations since they are no longer within the Flathead Valley and they are not representative of soil conditions occurring at the Site along the main fork of the River (the Middle Fork and the South Fork are not yet joined east of the Site). CDM Smith suggested that in the absence of suitable upstream location, a reference area located further downgradient/downstream of proposed Area #2 may be more appropriate. CFAC/Roux

will re-evaluate potential references areas both upgradient/upstream and downgradient/downstream of the Site, and will provide a proposed path forward for Area #2 in an additional response to comments document. USEPA and CDM Smith will also continue to evaluate alternative locations.

Exhibit A. Illustration of Proposed Site vs. Background Comparison Approach for Soil

CFAC/Roux discussed that they generally agree with the Exhibit A flow chart. Following the agreed path forward for the comparison of the Mean_{Background} versus the UCL_{Background} (as discussed in the above responses), CFAC/Roux will modify the flow chart, if warranted. In addition, CFAC/Roux discussed that the flow chart will be modified for the prior response related to outliers and the evaluation of small home range receptors. USEPA/CDM Smith generally agreed with the modifications to the flow chart. CFAC/Roux will modify the flow chart as discussed and will submit the flow chart to USEPA for approval prior to including it in the revised Background SAP.

PATH FORWARD AND SCHEDULE

CFAC/Roux indicated that they would respond to USEPA regarding their action items within one week. It was understood that USEPA/CDM Smith required some additional time to complete its full review of the responses to comments, confer internally regarding some of the above items; and to provide its concurrence and/or any follow-up comments. Pending USEPA approval of the responses to comments (including the supplemental information to be submitted within the next week), a revised Background Investigation SAP will be submitted to USEPA for approval. The background soil scope of work is currently scheduled for late-September to early October prior to the low-water sampling event, and as such, an approved SAP/notice to proceed will be required prior to proceeding with the work.